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U. S. DEPARTMENT OF
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FARMERS' BULLETIN No. 1585

VARIETIES

of

HARD

RED

WINTER

WHEAT



HARD RED WINTER WHEAT is grown principally in the central and southern Great Plains area, where hot summers and rather severe dry winters prevail. The States of Kansas, Oklahoma, and Nebraska lead in its production. More than 21,000,000 acres of this class of wheat are grown annually in the United States, comprising about two-fifths of the total wheat acreage.

From hard red winter wheat is produced flour of high bread-making quality.

Twenty varieties of hard red winter wheat are commercially grown in the United States, and these are known under about 40 different names. Of these, the leading varieties are Turkey, Kharkof, Kanred, and Blackhull. The Turkey and Kharkof are practically identical, and prior to the recent wide distribution of Kanred and Blackhull they made up nearly all of the hard winter wheat acreage.

Kanred has been grown commercially during the last 10 years. It is resistant to some of the forms of leaf rust and stem rust that occur in the hard winter wheat section. It also is slightly more winter resistant than Turkey and Kharkof, ripens slightly earlier, and outyields these varieties in most sections.

Blackhull has proved to be a high-yielding variety in certain sections of Kansas and Oklahoma, principally because of its earlier maturity and stiff straw.

Other new varieties have shown good local adaptation. Several nearly identical pure lines of Turkey or Kharkof, such as Nebraska No. 60, Iowa No. 404, Wisconsin Pedigree No. 2, Karmont, and Montana No. 36, have outyielded the ordinary Turkey or Kharkof varieties in the States in which they were developed.

Minturki has outyielded other hard red winter wheats in Minnesota because of its winter hardiness. Bacska has proved to be the best adapted variety for northern Wisconsin. Alton, a beardless variety, is sparingly grown in Kansas and Colorado, where a beardless hard red winter wheat is desired. Newturk, a new beardless wheat, has shown promise in Montana, and Redit, a beardless smut-resistant variety, is becoming popular in Washington.

This bulletin is a revision of and supersedes Farmers' Bulletin 1280.

VARIETIES OF HARD RED WINTER WHEAT¹

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THE HARD RED WINTER CLASS OF WHEAT

WHEAT is graded in five classes under the official grain standards of the United States. The third class is designated as Hard Red Winter. About 41 per cent of the wheat acreage of the United States is of this class. The varieties that make up this important class of wheat have hard red kernels and are grown from fall sowing, chiefly in the central part of the United States. Only a few distinct varieties are grown. The original strains were introduced from Russia. They have become important in the United States because of their winter hardiness, drought resistance, and high yields. From hard red winter wheat is manufactured a flour of high bread-making quality.

WHERE HARD RED WINTER WHEATS ARE GROWN

The hard red winter wheats are grown principally in the central and southern sections of the Great Plains area. The States leading in the growing of this class of wheat are Kansas, Oklahoma, and Nebraska. A considerable acreage is grown also in Illinois, Texas, Colorado, Montana, Washington, Iowa, Oregon, Idaho, and Indiana. Smaller acreages are grown in all other parts of the United States

¹ The information given in this bulletin is based upon (1) varietal experiments conducted by the Office of Cereal Crops and Diseases of the United States Department of Agriculture and the State agricultural experiment stations, either independently or in cooperation; (2) classification studies of all American wheat varieties; (3) a survey of the wheat varieties of the United States, in cooperation with the Bureau of Agricultural Economics, based upon 6,500 returns from 70,000 questionnaires sent to crop correspondents in 1924; (4) several years of personal observation of the wheat fields in the States where these varieties are grown; and (5) milling and baking experiments conducted by the milling investigations section of the Bureau of Agricultural Economics in cooperation with the Office of Cereal Crops and Diseases and also by the State agricultural experiment stations. Part of this material was issued in 1922 as Farmers' Bulletin 1280.

except the Southeastern States, the Atlantic Coast States, and the New England States. More than 21,000,000 acres, or about two-fifths of the wheat grown annually in the United States, is of the hard red winter class. The distribution of hard winter wheat in 1924 is shown on the accompanying map. (Fig. 1.)

AREAS TO WHICH HARD RED WINTER WHEATS ARE ADAPTED

The hard red winter wheats are best adapted to a section comprising portions of Kansas, Oklahoma, Nebraska, and Colorado, having an annual rainfall of less than 35 inches. In this section there is little competition with other classes of wheat. As the annual rainfall increases eastward the hard red winter wheats come into competition with the soft red winter wheats. In eastern Kansas

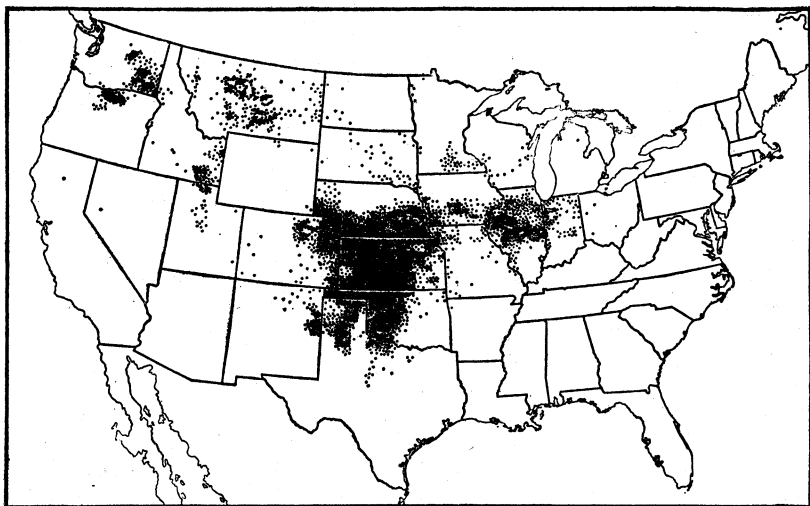


FIGURE 1.—Outline map of the United States, showing where hard red winter wheat was grown in 1924. Estimated area, 21,052,848 acres

and Oklahoma, northern Missouri, southern Iowa, and central Illinois, where the annual rainfall varies from 35 to 40 inches, the hard red winter wheats are adapted only to the higher, drier, and less fertile soils. In some of the drier sections of Oregon, Washington, and Idaho, where the annual rainfall is around 15 inches, hard red winter wheat is well adapted also and successfully competes with several other classes of wheat. The hard winter wheats also are of some importance in Minnesota, South Dakota, Wyoming, and Montana and are practically the only winter wheats that will survive the extreme winter temperatures. In most parts of these latter States, however, spring wheats are of the most importance.

VARIETIES

Twenty varieties of hard red winter wheat are commercially grown in the United States. These are known under about 40 different names. Only 9 of the 20 varieties can be distinguished by exter-

nal characters. The others have slightly different adaptations to conditions in the United States, due to having come from different parts of Europe or to having been selected and developed in different parts of this country. During the last 15 to 20 years thousands of selections have been made at different agricultural experiment stations from the introduced bulk shipments of hard red winter wheat. Many crosses have also been made with the object of producing new varieties having as many desirable characters as possible. Some of the best of these selections and hybrids have been distributed as improved registered varieties.

For convenience in discussion the varieties of hard red winter wheat are divided into two sections on the basis of head characters.

DISTINGUISHING CHARACTERS AND VARIETIES

SECTION 1.—Heads bearded: Turkey, Kharkof, Kanred, Blackhull, Minturki, Montana No. 36, Nebraska No. 60, Ilred, Nebraska No. 6, Iowa No. 404, Wisconsin Pedigree No. 2, Karmont, Bacska, Iobred, Beloglina, Oro.

SECTION 2.—Heads beardless: Michikof, Alton, Ridit, Newturk.

SECTION 1.—HEADS BEARDED

The wheats of section 1 comprise 16 very similar varieties having bearded heads, with glabrous (not velvety) chaff and hard dark-red kernels. With the exception of Iobred, which has brown chaff, and Blackhull, which has black chaff under certain conditions, all of the varieties have white chaff. These varieties often are referred to as the Crimean group of hard red winter wheat. The plants are of medium height and have slender stems which lodge easily in wet seasons. The leaves are dark green and very narrow. The heads are about 3 to 3½ inches long and rather narrow and tapering. The chaff usually is sufficiently firm to prevent loss from shattering. The kernels of the wheats of the Crimean group can be distinguished from any of the varieties of hard spring wheat by the rounded edges and the small area of the germ or embryo. The kernels are also longer than those of most of the varieties of hard red spring wheat. These wheats are medium early in maturing. The leading variety of this section, or the Crimean group, is the Turkey.

TURKEY

Turkey (Turkey Red) is known also by the following names: Alberta Red, Crimean, Defiance, Egyptian, Hard Winter, Hundred and One, Improved Turkey, Lost Freight, Malcome, Malakof, Minnesota Red Cross, Minnesota Reliable, Pioneer Turkey, Red Russian, Red Winter, Russian, Tauranian, and Worlds Champion. Other names, such as Argentine, Bulgarian, Hungarian, Romanella, and Theiss, have been applied to introductions of wheat apparently identical with Turkey which are grown only experimentally.

Turkey has the general characteristics mentioned as belonging to wheats of the Crimean group. The grains are hard and of a dull dark-red color. The "beaks" (short beards on the outer chaff) are about one-eighth to three-eighths inch long. (Fig. 2, A.) The variety is comparatively winter hardy and drought resistant. It also is fairly resistant to bunt or stinking smut in the Pacific North-

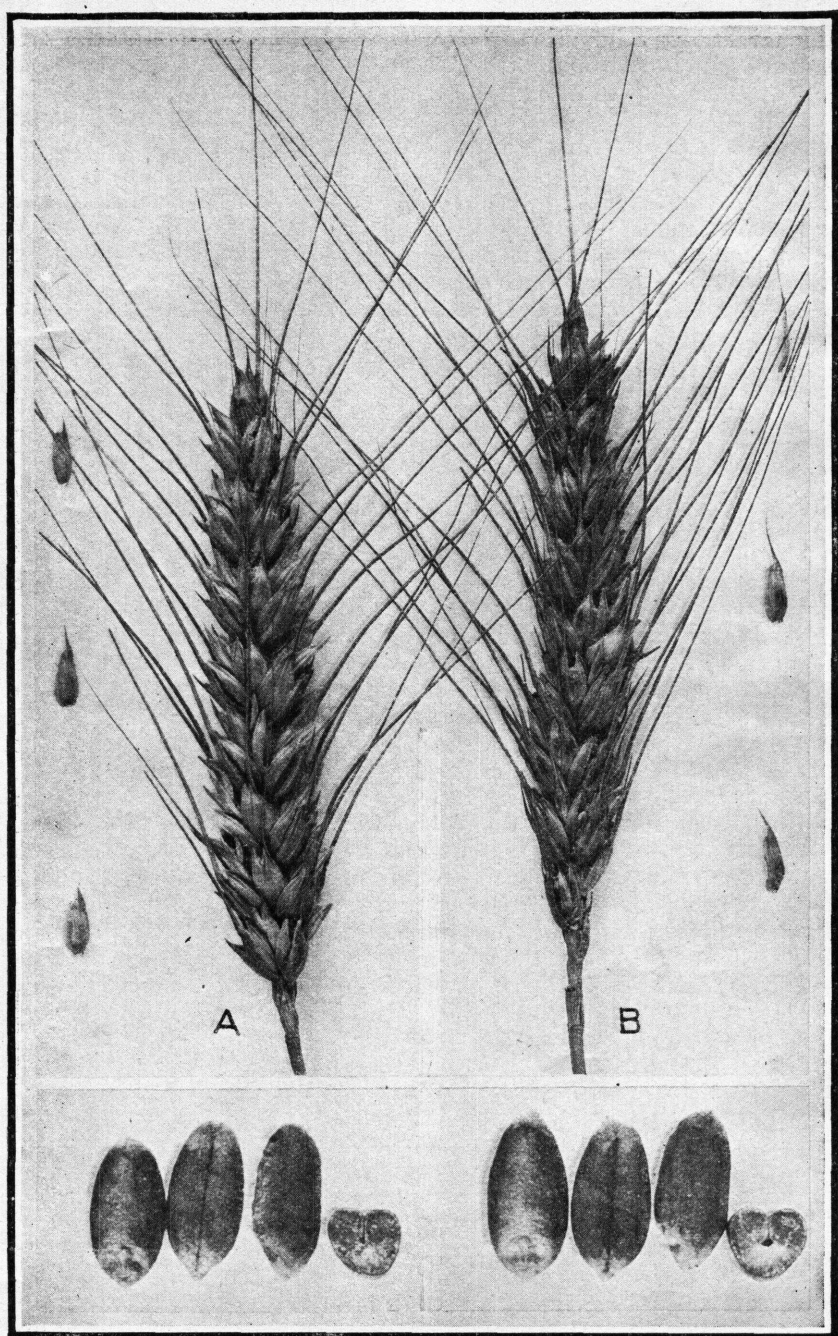


FIGURE 2.—(A) Turkey and (B) Kanred varieties of hard red winter wheat. Spike, face view, natural size; glumes from lower, central, and upper portions of spike, natural size; kernels in three positions and in transverse section, magnified three diameters

west. Turkey as originally introduced and as now grown on farms contains a number of types. Some of these types, which have been separated, were the source of new varieties or improved strains of Turkey.

Turkey wheat was introduced into the United States by Mennonite immigrants from Russia about 1873. The original home of this wheat is in the portion of Russia just north and east of the Black Sea and north of the Caucasus Mountains. It was first grown in this country in Kansas and Nebraska. After the steel-roller mills were perfected, so that hard wheat could be properly ground, the growing of Turkey developed rapidly. To-day it is the most widely grown variety of wheat in the United States. More than 14,000,000 acres of Turkey were grown in 30 States of the Union in 1924. Of these, about 6,000,000 acres were grown in Kansas, 1,900,000 acres in Nebraska, and 1,800,000 acres in Oklahoma.

Turkey is best adapted to the areas shown in solid black on the accompanying map. (Fig. 1.) Previous to the development of the Kanred and Blackhull varieties, Turkey was the best-yielding variety for those areas shown by the lighter dotted parts of the map. The districts of northeastern Kansas, northern Missouri, southern Iowa, and central Illinois are those in which both hard and soft red winter wheats are grown. In these sections the value of Turkey in comparison with other varieties depends on the soil, elevation, rainfall, and seasonal or local conditions, but in general several varieties of soft winter wheat are nearly or quite equal to Turkey. North and west of the area of heavy production of hard red winter wheat, Turkey is one of the best adapted varieties of winter wheat.

Turkey is a high-yielding variety in southeastern Idaho and the adjoining section of Utah. It is the best variety of wheat for the western part of the Columbia Basin of Oregon and is superior to other varieties of winter wheat in the drier portions of eastern Washington. In this latter section the comparative resistance of Turkey to smut gives it an advantage over the varieties of club or soft red winter wheats commonly grown in those districts.

Turkey should not be grown in humid sections of the East or South or along the Pacific coast, as it is easily lodged and injured by excessive rainfall. The grain also becomes very starchy under these conditions.

From Turkey wheat is manufactured a flour of high bread-making quality. Turkey and Kharkof, the two standard but identical hard red winter wheats for flour making, are equal or superior to all other hard winter varieties in milling and baking quality.

KHARKOF

Kharkof can not be distinguished from Turkey and should properly be considered as identical with that variety. One introduction of Kharkof contained about 80 per cent of plants having longer "beaks" (short beards on the outer chaff) than Turkey. Most of the Kharkof variety grown, however, is identical with Turkey in all observable characteristics.

Kharkof was first introduced into the United States from Starobielsk, Kharkof, Russia, in 1900, by the late Mark Alfred Carleton, of the United States Department of Agriculture. The Kharkof Govern-

ment, where this wheat was obtained, is north of the section in which Turkey wheat was grown. It was thought, therefore, that Kharkof would be more winter hardy than Turkey. In the earlier experiments it gave better results than ordinary Turkey, but in recent years very little difference in hardiness or yield has been observed. Kharkof was quite widely distributed by the United States Department of Agriculture and several State agricultural experiment stations in the early years of the present century.

Kharkof is grown in the same area as Turkey and frequently is not considered distinct or kept separate from that variety. This is especially true in Kansas, where Kharkof is grown to a considerable extent; but in Montana, where it probably is more widely grown than Turkey, its identity has been more carefully preserved.

Kharkof has yielded as well as Turkey in practically all sections where it has been grown. The average yields of the two varieties during a long period of years frequently are about the same. In the Great Plains area, however, Kharkof appears to give slightly higher yields than Turkey, but only in Montana are the differences significant. Outside of the Great Plains area the differences are negligible. In milling and baking quality the Kharkof and Turkey varieties are identical.

KANRED²

Kanred (formerly known as P-762) differs from Turkey chiefly in being resistant to several forms of leaf and stem rust. It also is slightly earlier and a little more winter hardy than Turkey. Kanred can be distinguished from Turkey by the longer beaks on its outer chaff. The beaks of Kanred vary from one-eighth to 1 inch in length, while those of the Turkey and Kharkof varieties usually vary only from one-sixteenth to three-eighths inch. (Fig. 2, B.) Kanred also has shown some resistance to bunt or stinking smut in the Pacific Northwest.

Kanred originated from a head selected from a plot of Crimean wheat by H. F. Roberts at the Kansas Agricultural Experiment Station in 1906. The parent variety, Crimean, is identical with Turkey and had been imported from Russia in 1900 by the United States Department of Agriculture. After being thoroughly tested by the Kansas station the Kanred variety was distributed in 1917.

Kanred is now widely grown throughout the entire State of Kansas and in the adjacent sections of Nebraska, Oklahoma, Colorado, and Missouri and in Illinois and Texas. It is grown to a slight extent in several other States. It has been estimated that about 4,300,000 acres of Kanred wheat were grown in the United States in 1924.

Kanred may be grown with success wherever Turkey is grown. In Kansas, Nebraska, Oklahoma, Colorado, Texas, Wyoming, and South Dakota it has partly replaced the Turkey and Kharkof varieties. (Fig. 3.)

Outside of this area it has shown little advantage over Turkey and Kharkof. Kanred is not well adapted to the humid sections and

²For a more complete discussion of this wheat, see CLARK, J. A. and SALMON, S. C. KANRED WHEAT. U. S. Dept. Agr. Circ. 194, 13 p., illus. 1921.

lower and heavier soils of eastern Kansas, southeastern Nebraska, and eastern Oklahoma, because of having rather weak straw. In these humid sections it yields as well as or better than Turkey, but it is outyielded by varieties of soft winter wheat. In Montana and the regions west of the Rocky Mountains Kanred does not yield more than Turkey and Kharkof.

In experiments Kanred has been found about equal to Turkey and Kharkof in milling and bread-making value. It has a slightly higher bushel weight and produces a greater percentage of straight flour than Turkey and Kharkof grown under the same conditions, but has a slightly lower percentage of protein and produces a loaf of bread having a slightly smaller volume. In weight, texture, and color of loaf produced Kanred is about equal to the Turkey and Kharkof.

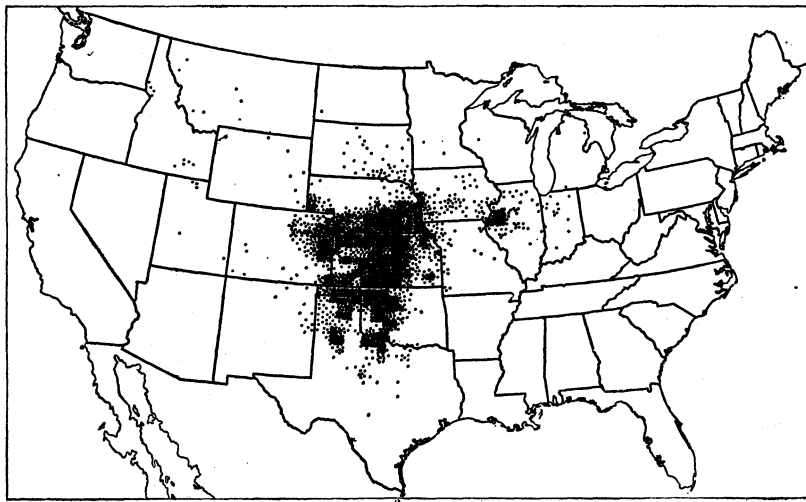


FIGURE 3.—Distribution of Kanred wheat in 1924. Estimated area, 4,314,962 acres

BLACKHULL³

Blackhull (known also as Clark's Black-Hulled and Black Chaff) can usually be distinguished by the black stripes or solid black color of the outer chaff. Under some conditions this black color is not apparent. Blackhull differs from Turkey also in being a little earlier and taller and in having a stiffer straw and somewhat larger and softer kernels. It heads relatively early, but ripens only a very few days earlier than Turkey. It is not resistant to rust or smut, but its earliness may enable it to escape severe rust injury. It is not as winter hardy as Turkey, Kharkof, and Kanred.

Blackhull originated from three heads found by Earl G. Clark in a field of Turkey wheat near Sedgwick, Harvey County, Kans., in 1912. The variety was increased by Mr. Clark and was first distributed in 1917. It has since become rather widely grown in south-cen-

³ For a more complete discussion of this wheat, see SALMON, S. C., SWANSON, C. O., and LAUDE, H. H. BLACKHULL WHEAT IN KANSAS. KANS. Agr. Expt. Sta. Bul. 241, 24 p., illus. 1927.

tral Kansas and north-central Oklahoma. In 1924 it was estimated that Blackhull was grown on 1,519,000 acres.

Blackhull has given yields about equal to or slightly better than those of Kanred in central and eastern Kansas, but somewhat less than those of Kanred in western Kansas. This variety has replaced Kanred and other varieties to a large extent in south-central Kansas. (Fig. 4.) Outside of Kansas it has been most promising in Oklahoma and is now rather widely grown in the northern and western part of the State. Blackhull has given good comparative yields in northeastern Colorado and in eastern Oregon. Owing to its lack of winter hardiness, it should not be grown in sections having severe winters. In Kansas it is probably safe to grow Blackhull in the central and southern part of the State, but it should not be

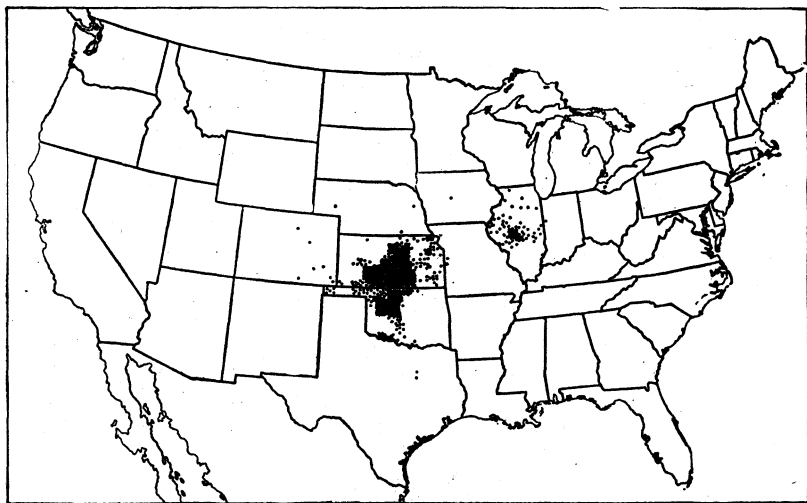


Fig. 4.—Distribution of Blackhull wheat in 1924. Estimated area, 1,519,992 acres

grown in the northwestern counties, as severe winterkilling might result in heavy losses.

Since the distribution of Blackhull there has been some question regarding its milling and baking qualities. In experiments Blackhull yields a lower percentage of straight flour than Turkey or Kanred, although it has a higher test weight per bushel. Baking experiments have shown that when the dough is mildly treated, comparable to the treatment given by the housewife, Blackhull flour will produce as large a loaf volume as flour from Turkey and Kanred. If the treatment is severe, such as is given in commercial bakeries, the loaf volume may be much less than that of Turkey and Kanred. This difference is probably due to the fact that Blackhull has weaker gluten, characteristic of soft-wheat varieties.

MINTURKI

Minturki (Minnesota No. 1507) resembles Turkey, but differs in having a more slender head and softer and more slender kernels. It is very winter hardy, more so than any other variety of hard winter

wheat. It originated from a cross between Turkey and Odessa (the latter a beardless soft red winter wheat). The cross was made at the Minnesota Agricultural Experiment Station in 1902. On account of its hardness the variety was increased and first distributed in 1919. It is now grown to a limited extent in Minnesota, Nebraska, and Iowa.

Minturki has outyielded other varieties of winter wheat in Minnesota. Outside of that State it is not so promising, but it has given fairly good yields in central Utah and central Montana. In these localities, however, it is outyielded by several other varieties of hard winter wheat. Where severe winterkilling may be expected Minturki offers considerable promise, especially in the subhumid and humid sections of the upper Mississippi Valley.

MONTANA NO. 36

Montana No. 36 is identical with Turkey and Kharkof in all observable characters. It is a selection from Kharkof, made at the Montana Agricultural Experimental Station, from which it was distributed in 1915. This wheat is grown to a considerable extent in Montana. It is as winter hardy as Turkey or Kharkof and has given slightly higher yields in some sections of Montana. It also is equal to these varieties in milling and baking quality.

NEBRASKA NO. 60

Nebraska No. 60 is identical with Turkey in appearance. It is a high-yielding selection of Turkey developed at the Nebraska Agricultural Experiment Station. It was distributed by that station in 1918, after experiments had shown it to be a higher yielding strain than Turkey. Further experiments have shown it to be about equal to Kanred in yield, except in rust years. Nebraska No. 60 is equal to Turkey in milling and baking value.

ILRED

Ilred is a pure-line selection from Turkey made at the Illinois Agricultural Experiment Station, Urbana, Ill., in 1910. It was first grown commercially in 1923 as Turkey 10-110. Most of the acreage of Ilred is confined to Illinois, where it seems to have the ability to outyield Turkey.

NEBRASKA NO. 6

Nebraska No. 6 is nearly identical with Nebraska No. 60 and has the same history as that selection. In both yield and quality it is perhaps slightly inferior to Nebraska No. 60.

IOWA NO. 404

Iowa No. 404 can not be distinguished from Turkey and Kharkof. This is a selection from Turkey made at the Iowa Agricultural Experiment Station. It was first distributed from that station in 1913 and is now grown in Iowa and Indiana. It has given higher yields and is probably slightly harder than Turkey in central Iowa.

WISCONSIN PEDIGREE NO. 2

Wisconsin Pedigree No. 2, is a pure-line strain which appears to be identical with Turkey. It was selected from Turkey at the Wisconsin Agricultural Experiment Station and was first distributed in 1918. It is now grown to some extent in Wisconsin. It is more winter hardy and gives higher yields than Turkey in that State and is the highest yielding variety of wheat in the southern part of Wisconsin.

KARMONT

Karmont is the result of a selection made from Kharkof in 1911 at the Judith Basin Substation, Moccasin, Mont. It was first grown commercially in Montana in 1921. The variety is very similar in appearance to Turkey and Kharkof, although it has the ability to outyield these varieties under Montana conditions. In milling and baking value it is equal to Turkey and Kharkof. Karmont is becoming generally grown in the Judith Basin of Montana, the area for which it is best adapted.

BACSKA

Bacska, or Wisconsin Pedigree No. 408, is very similar in appearance to Kanred, but it is slightly taller and does not have the resistance of that wheat to stem and leaf rust. It has long beaks like Kanred. The kernels of Bacska are slightly larger and softer than those of Turkey and Kanred.

The Bacska variety originally was introduced into the United States from Budapest, Austria-Hungary, in 1900, by the United States Department of Agriculture. The Bacska wheat that is now grown in this country is a selection from this importation made by E. J. Delwiche, of the Wisconsin Agricultural Experiment Station, at the Ashland branch station. This pure-line strain was distributed from that station and is now the highest-yielding variety of wheat for northern Wisconsin and should be more generally grown. In milling and baking value Bacska is equal to Turkey.

IOBRED

Iobred was developed from a variety or a hybrid mixed with Banat and separated in 1915 by L. C. Burnett at the Iowa Agricultural Experiment Station. It was first distributed for commercial growing in 1923 and is being grown only in Iowa. The superior characters of this variety under Iowa conditions are winter hardiness, strong straw, and good yields. It is a brown-chaffed variety with much shorter and broader kernels than most varieties of the hard red winter class.

Iobred may become widely grown in Iowa because of its ability to withstand lodging. In drier regions it is doubtful whether it will become commercially important, because of the fact that under such conditions it shatters very easily..

BELOGLINA

Beloglina is very similar to Kanred, except that it is slightly later and does not have the resistance of Kanred to stem and leaf

rust. It is slightly more winter hardy than Kanred. According to the 1924 survey, this variety was being grown to a very limited extent in Wisconsin.

Beloglina was introduced into the United States from Rostof on Don, Russia, where it was claimed to have been one of the most hardy winter wheats and able to stand great extremes of temperature and moisture. It is doubtful whether it will ever become commercially important.

ORO

Oro is a new and fairly smut-resistant selection of Turkey, developed at the Sherman County Branch Station, Moro, Oreg. The selection was made in 1921 as Turkey 889-5. Oro was placed in the replicated nursery experiments at Moro in 1923 and in plot experiments in 1926. It also has been tested during periods of three to five years in several cooperative farm nurseries in Oregon and, since 1928, in plot experiments at several experiment stations in other States.

Oro differs from Turkey in having a shorter and stouter spike and taller, stiffer, and yellower straw. In addition to being fairly resistant to bunt or stinking smut, it is winter hardy and of high quality for bread making. Seed was first distributed in the fall of 1927 for commercial growing. It now is sparingly grown in the Columbia River Basin of Oregon. The limits of its adaptation have not yet been determined, but the promising results obtained in 1928 from experiments in Kansas, Nebraska, and Montana indicate that it may be more widely adapted.

SECTION 2.—HEADS BEARDLESS

Only four commercial varieties of hard red winter wheat are beardless.

MICHIKOF

Michikof is a beardless variety developed at the Indiana Agricultural Experiment Station from a cross made in 1912 between Michigan Amber and Malakof. The selection from which the variety originated was made in 1915. The variety has been grown commercially for several years in Indiana. In 1924 it was estimated that it occupied more than 50,000 acres. The outstanding characters of this variety are winter hardiness and hard kernels of high test weight which make flour of good quality for bread-making purposes. There has been some opposition to Michikof from the millers of Indiana, since they have been accustomed to milling soft wheats.

ALTON

Alton (Ghirka Winter) differs from Turkey in having beardless heads and shorter and softer kernels with a very small germ. Alton is of medium height and is midway in ripening, being usually a day or two later than Turkey. The straw is stiffer than that of Turkey. The heads are slender and tapering.

Alton was introduced into the United States from Altonau, near Melitopol, in northern Taurida, Russia, by the United States Depart-

ment of Agriculture in 1900. It was distributed to some extent, but its production has never become important. The wheat was formerly called Ghirka Winter, but has been renamed Alton. Mixtures of beardless hard red winter wheats nearly identical with Alton frequently are found in fields of Turkey. Many of these mixtures have been isolated and tested, but none have been grown commercially.

Alton is now grown to a slight extent in Colorado and Kansas, and its distribution seems to be decreasing. In Colorado and Wyoming it is generally known as Ghirka Winter, but in Kansas its identity is lost.

Alton has given good yields in northeastern Colorado and southeastern Wyoming, but even in these sections the yields are less than those of Turkey, Kharkof, and Kanred. Unless it is desired to grow a beardless winter wheat, Alton should be entirely replaced by Kanred. In milling and baking value Alton is slightly inferior to most other hard winter wheats.

RIDIT

Ridit, a variety having beardless heads, was developed at the Washington Agricultural Experiment Station from a cross between Turkey and Florence. The cross was made in 1915, and a selection made in 1919 from this cross resulted in the Ridit variety. The outstanding characteristics of this variety are its bunt or smut resistance, resistance to shattering, good yields, and milling qualities. It was first distributed for commercial growing in Washington in 1923 and since that time has rapidly increased in distribution.

Ridit is the result of crossing which was started to develop a variety of wheat resistant to bunt or striking smut and which had good yield and quality. Under Washington conditions Ridit may be grown without fear of smut infection. It is adapted to eastern Washington and the panhandle of Idaho, where the winters are rather mild. Ridit is not adapted and should not be grown where there is danger of severe winterkilling.

NEWTURK

For years there has been a demand for a beardless variety of hard red winter wheat which would yield as well as Turkey or Kharkof. Newturk is the result of an experiment planned to produce such a variety by crossing. The cross between Newton and Turkey was made at Moro, Oreg., in 1916. In the fall of 1920 beardless selections from this cross were seeded at Moccasin, Mont. Of this group of selections Newturk proved to be the best. It was distributed in 1925 for commercial growing. It yields as well as or slightly better than Kharkof in Montana, is resistant to shattering, and has good quality for milling and bread making. While it has been tested in States other than Montana and has given good results, it probably is best adapted to Montana. It seems that in Montana it may safely replace Kharkof if the farmer desires to grow a beardless variety rather than a bearded one.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

June 6, 1929

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